

AMENDMENTS TO THE CLAIMS

16. (Canceled)

17. (Canceled)

20. (Previously added) A method for producing a light-emitting semiconductor device, said method comprising:

forming a substrate;

forming a buffer layer on said substrate;

forming an N-layer of N-type nitrogen-III Group compound semiconductor satisfying the formula $Al_xGa_yIn_{1-x-y}N$, inclusive of $x=0$, $y=0$, and $x=y=0$;

forming a P-layer of P-type nitrogen-III Group compound semiconductor satisfying the formula $Al_xGa_yIn_{1-x-y}N$; and

forming between said N-layer and said P-layer an intervening layer of nitrogen-III Group compound semiconductor satisfying the formula $Al_xGa_yIn_{1-x-y}N$, said intervening layer being doped with a P-type dopant.

21. (Previously added) The method according to claim 20, wherein said intervening layer comprises a Zn-doped layer.

GI 22. (New) A method for producing a light-emitting semiconductor device of a group III nitride compound, comprising:

forming an N-layer of an N-type conduction, said N-layer comprising gallium nitride;

forming an emission layer of group III nitride compound semiconductor satisfying the formula, $Al_{x1}Ga_{y1}In_{1-x1-y1}N$, where $0 \leq x1 \leq 1$, $0 \leq y1 \leq 1$, and $0 \leq x1+y1 \leq 1$, on said N-layer;

forming a P-layer of P-type conduction, on said emission layer, said P-layer comprising aluminum gallium nitride satisfying the formula, $Al_{x2}Ga_{1-x2}N$, where $0 < x2 < 1$;

forming a contact layer of P-type conduction, on said P-layer, said contact layer comprising gallium nitride,

wherein a bandwidth of said N-layer is narrower than a bandwidth of said P-

layer, and a potential barrier of a valence band of said N-layer is lower than a potential barrier of a conduction band of said P-layer.

23. (New) The method for producing a light-emitting semiconductor device according to claim 22, wherein said emission layer is doped with acceptor and donor impurities.

24. (New) The method for producing a light-emitting semiconductor device according to claim 22, wherein said contact layer of P-type conductivity is formed between said P-layer and an electrode.

25. (New) The method for producing a light-emitting semiconductor device according to claim 22, further comprising:

forming an electrode contacting said contact layer.

